20040042470

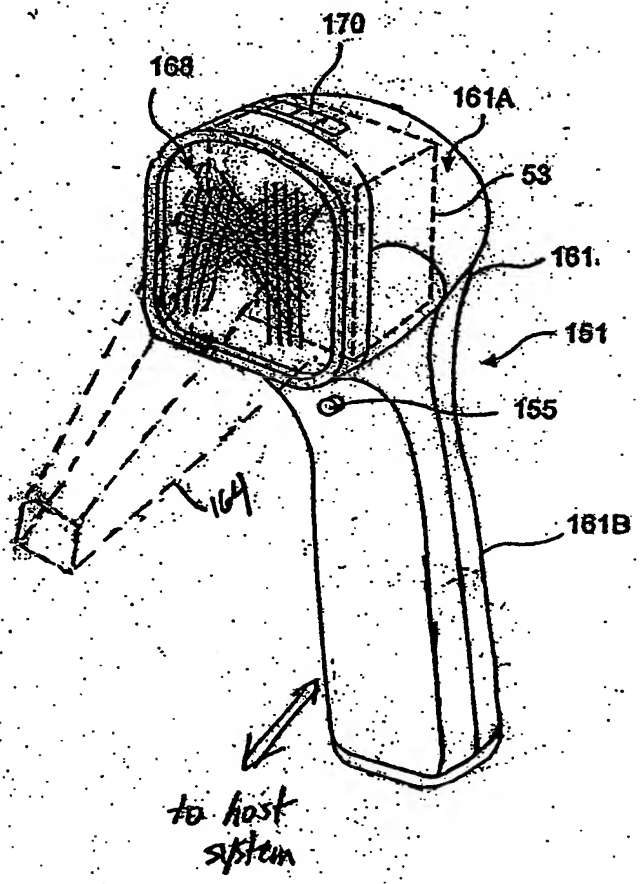


FIG. 1A

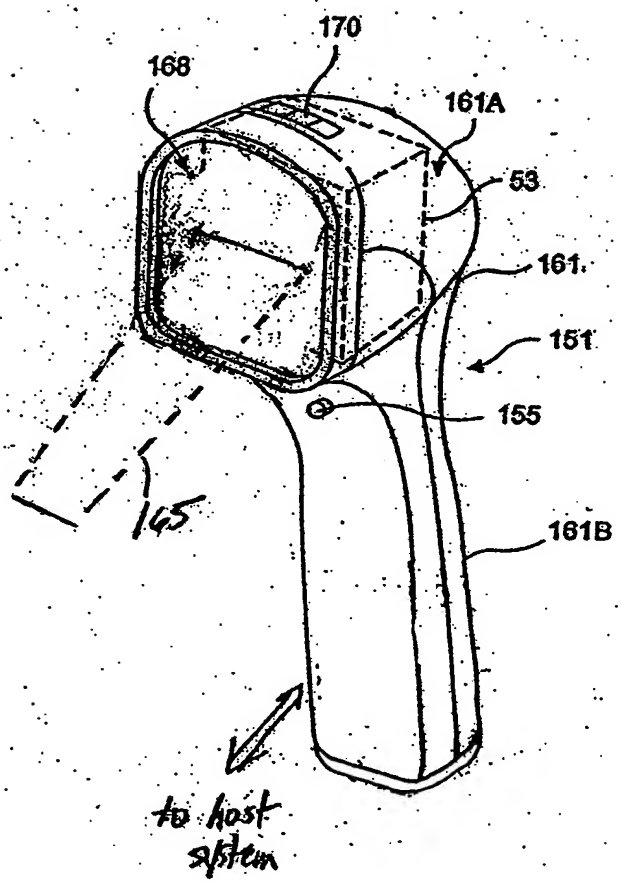


FIG. 1B

20080140022 A1 2008-06-12

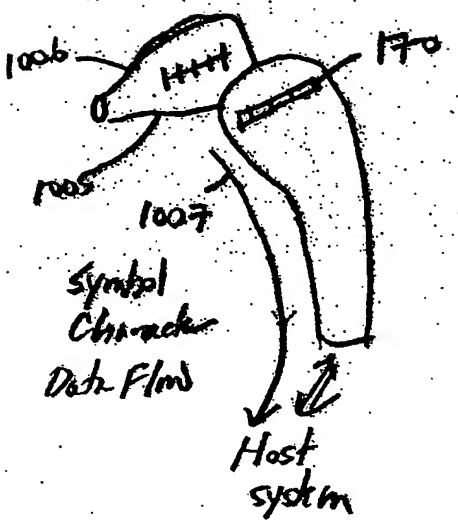


FIG. 2A

20080410 Sheet 003 of 022

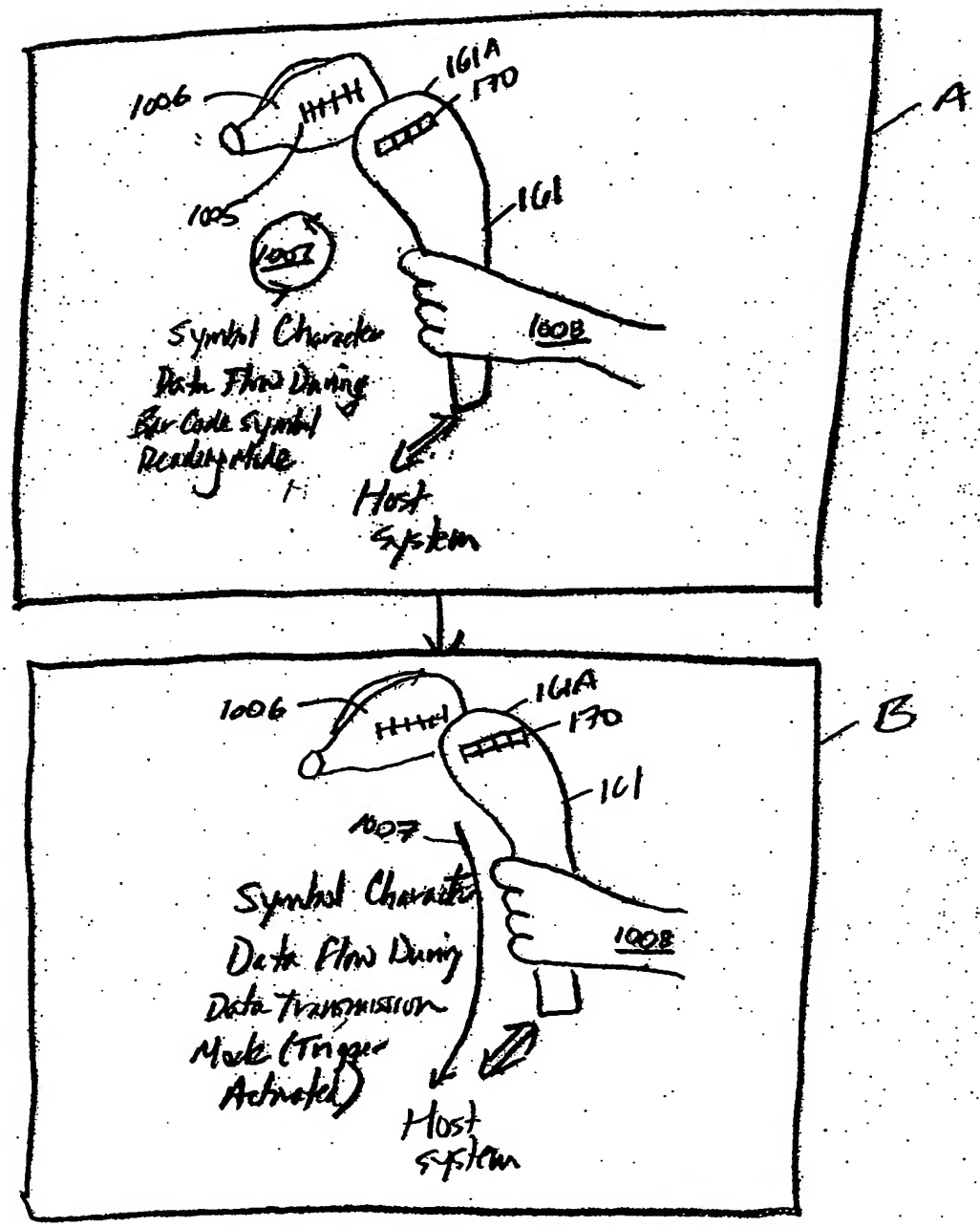


FIG. 2B

2080402 · 04/24/2007

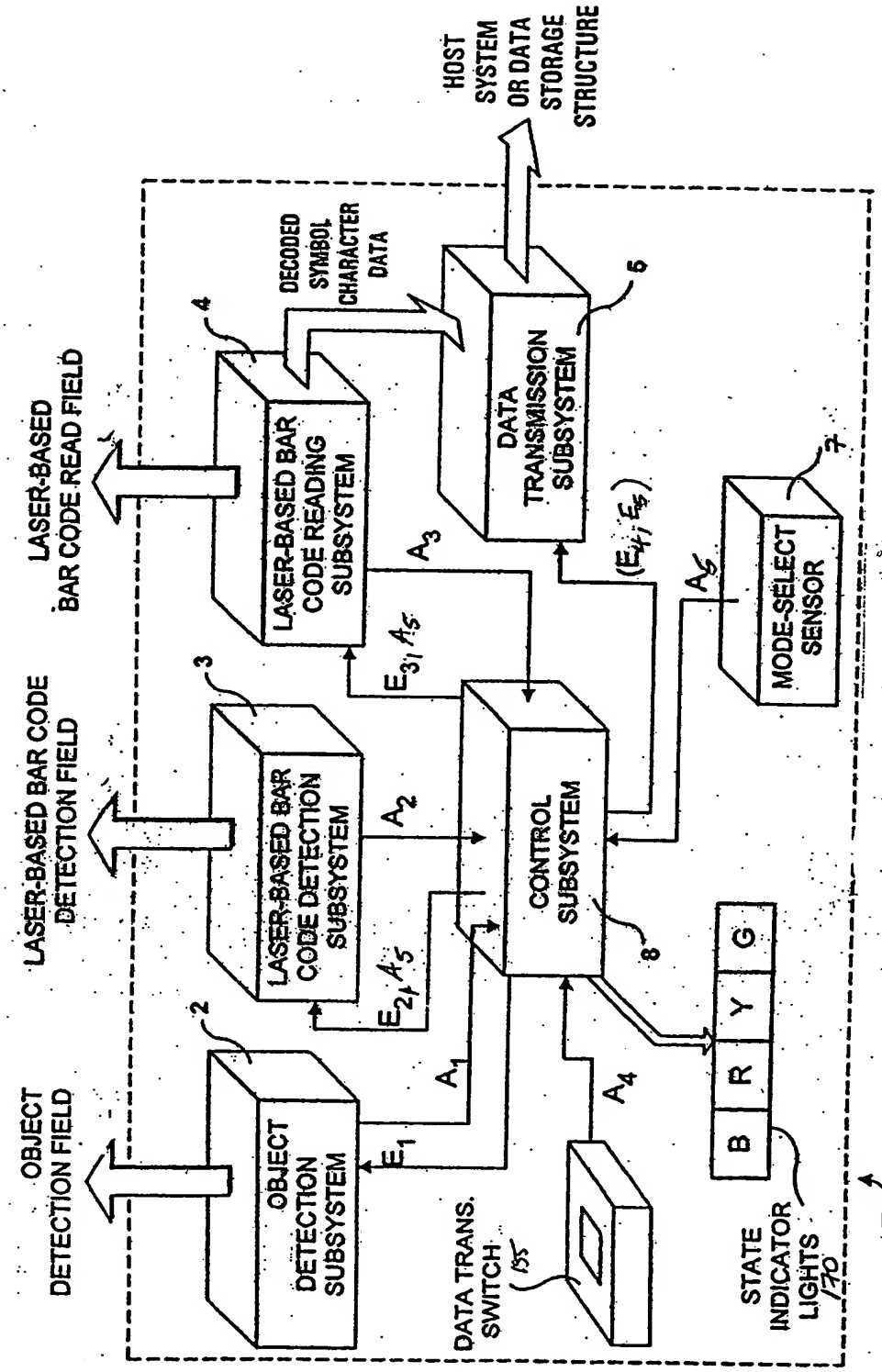

HOST SYSTEM OR DATA STORAGE STRUCTURE
DECODED SYMBOL CHARACTER DATA
LASER-BASED BAR CODE READ FIELD
LASER-BASED BAR CODE DETECTION FIELD
OBJECT DETECTION FIELD
LASER-BASED BAR CODE READING SUBSYSTEM
DATA TRANSMISSION SUBSYSTEM
LASER-BASED BAR CODE DETECTION SUBSYSTEM
CONTROL SUBSYSTEM
MODE-SELECT SENSOR
OBJECT DETECTION SUBSYSTEM
DATA TRANS. SWITCH
STATE INDICATOR LIGHTS
B
R
Y
G
A1
A2
A3
A4
A5
E1
E2, A5
E3, A5
(E4, E5)
2
3
4
5
6
7
8
155
170
157

FIG. 3.

2080h0" 2hEhTOOT

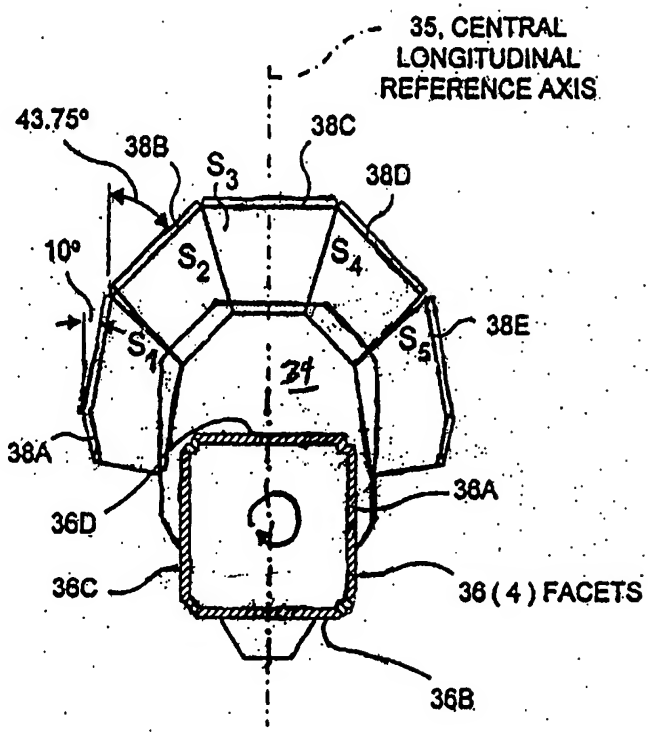
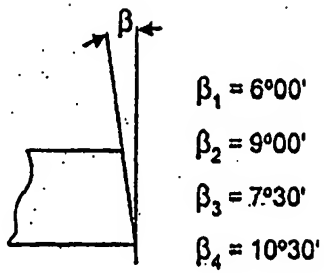


FIG. 4A

	TWIST α	BEND θ
S_{1-5}	10°	46.0°
S_{2-4}	43.75°	42.5°
S_3	90°	40.5°

FIG. 5B



$\beta_1 = 6°00'$
$\beta_2 = 9°00'$
$\beta_3 = 7°30'$
$\beta_4 = 10°30'$

FIG. 5A

Sheet 6 of 22

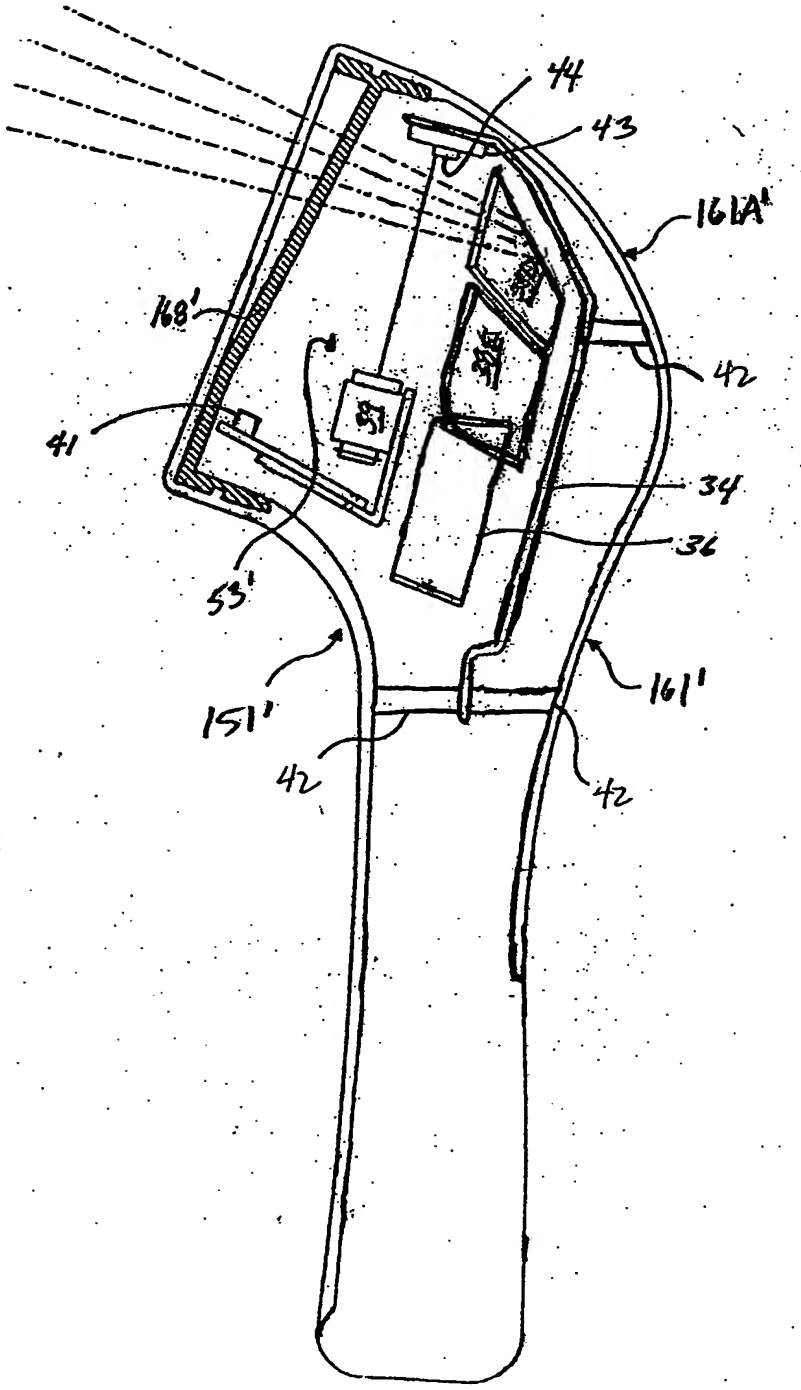


FIG. 4B

20080402 24824.0001

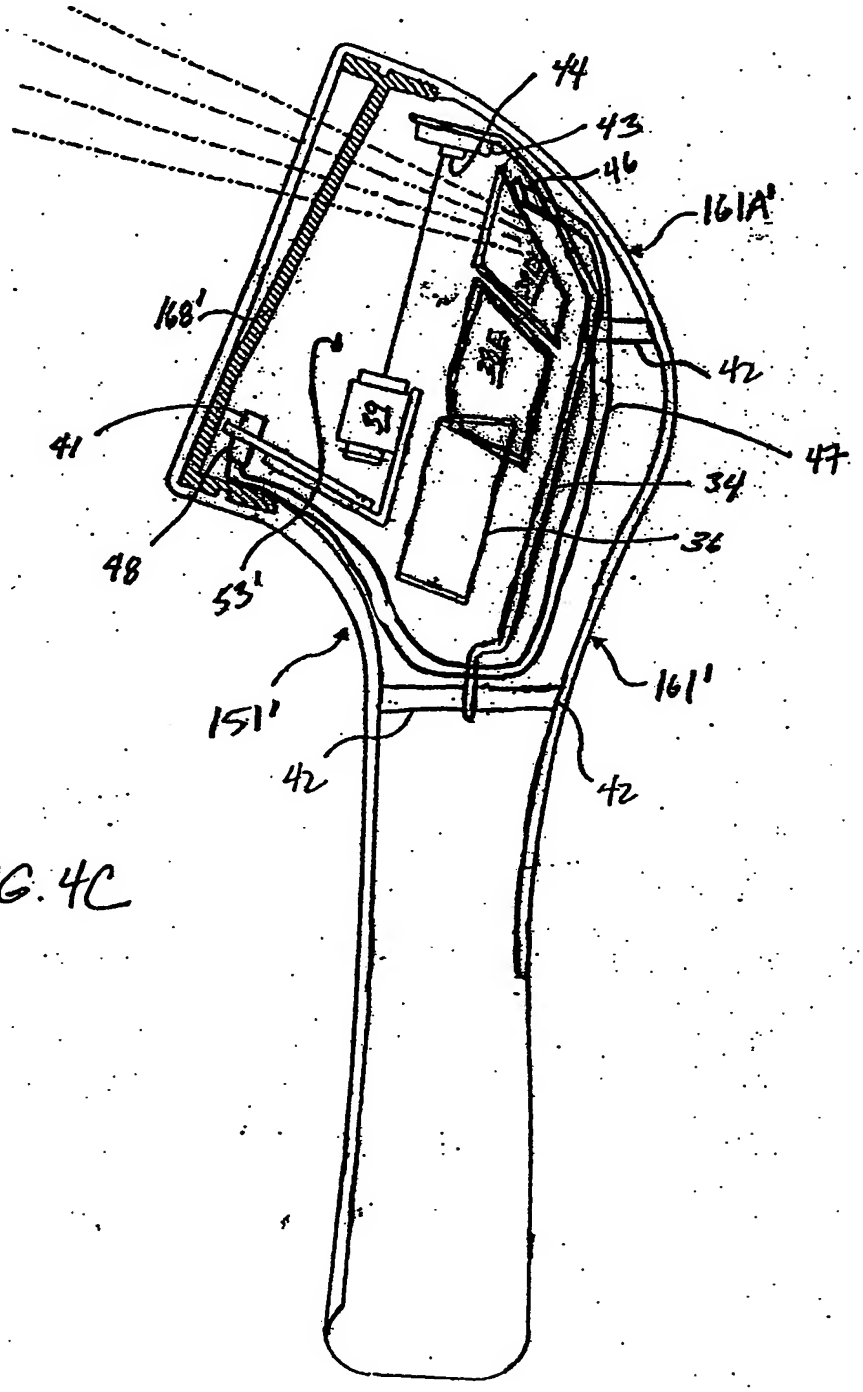


FIG. 4C

20080402-0408402

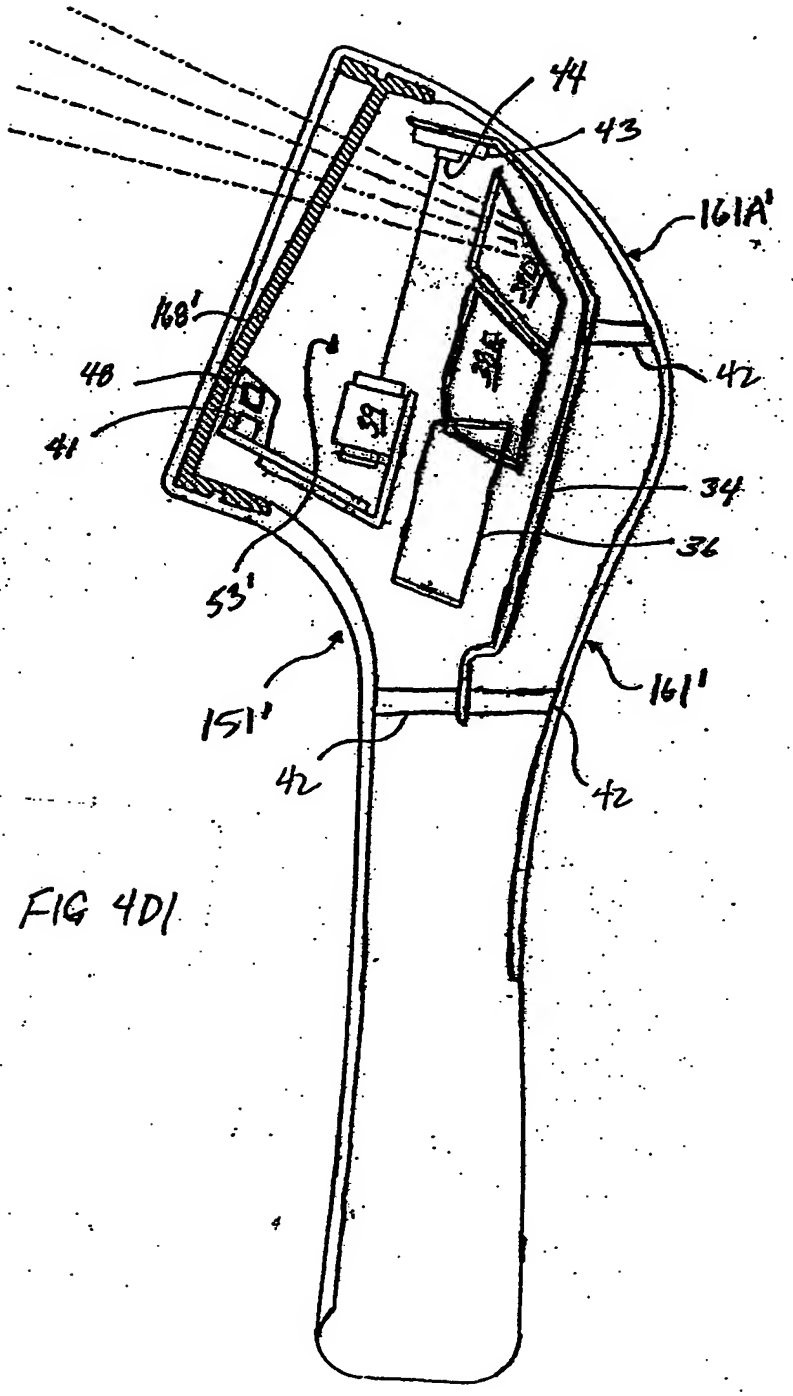


FIG 4D1

20080402.2146.0015

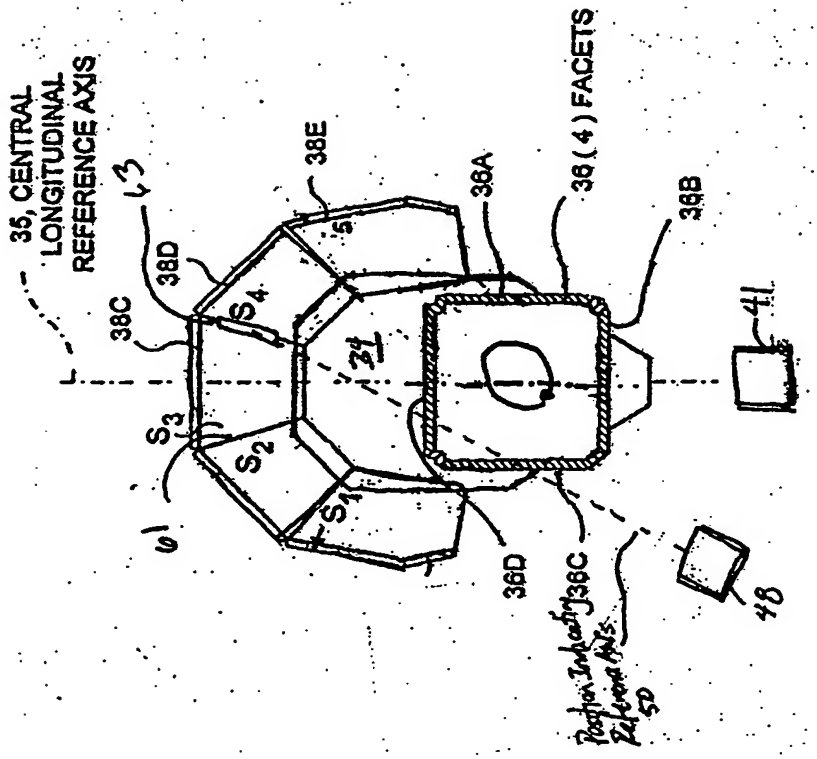

35, CENTRAL LONGITUDINAL REFERENCE AXIS
43
38C
38D
38E
38A
36(4) FACETS
38B
41
S_4
S_3
S_2
S_1
61
34
36D
36C
48
Position Indicating Reference Axis
50

FIG. 4D2

20080040243 2008-02-21

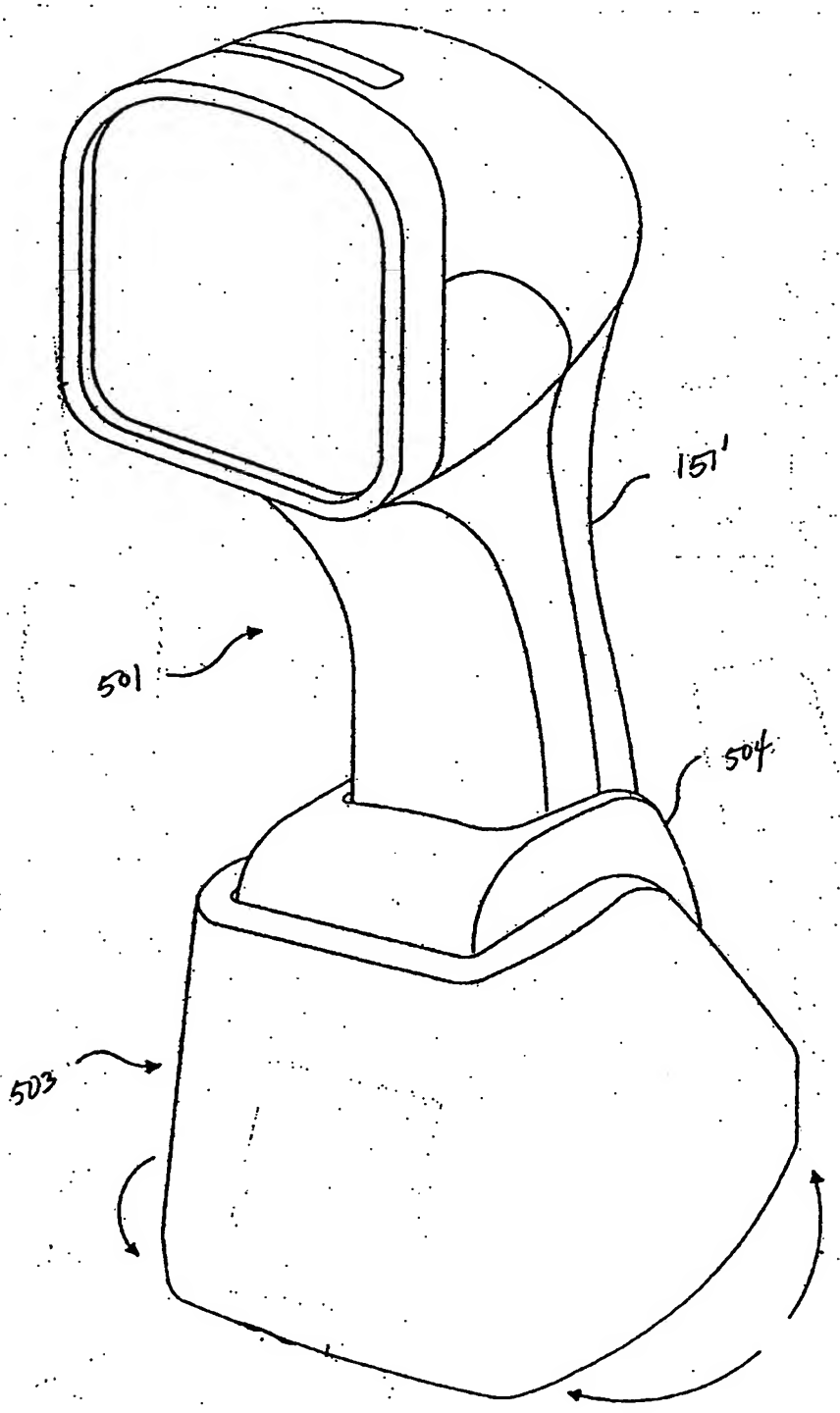


FIG. 5A

20040042 the FOOT

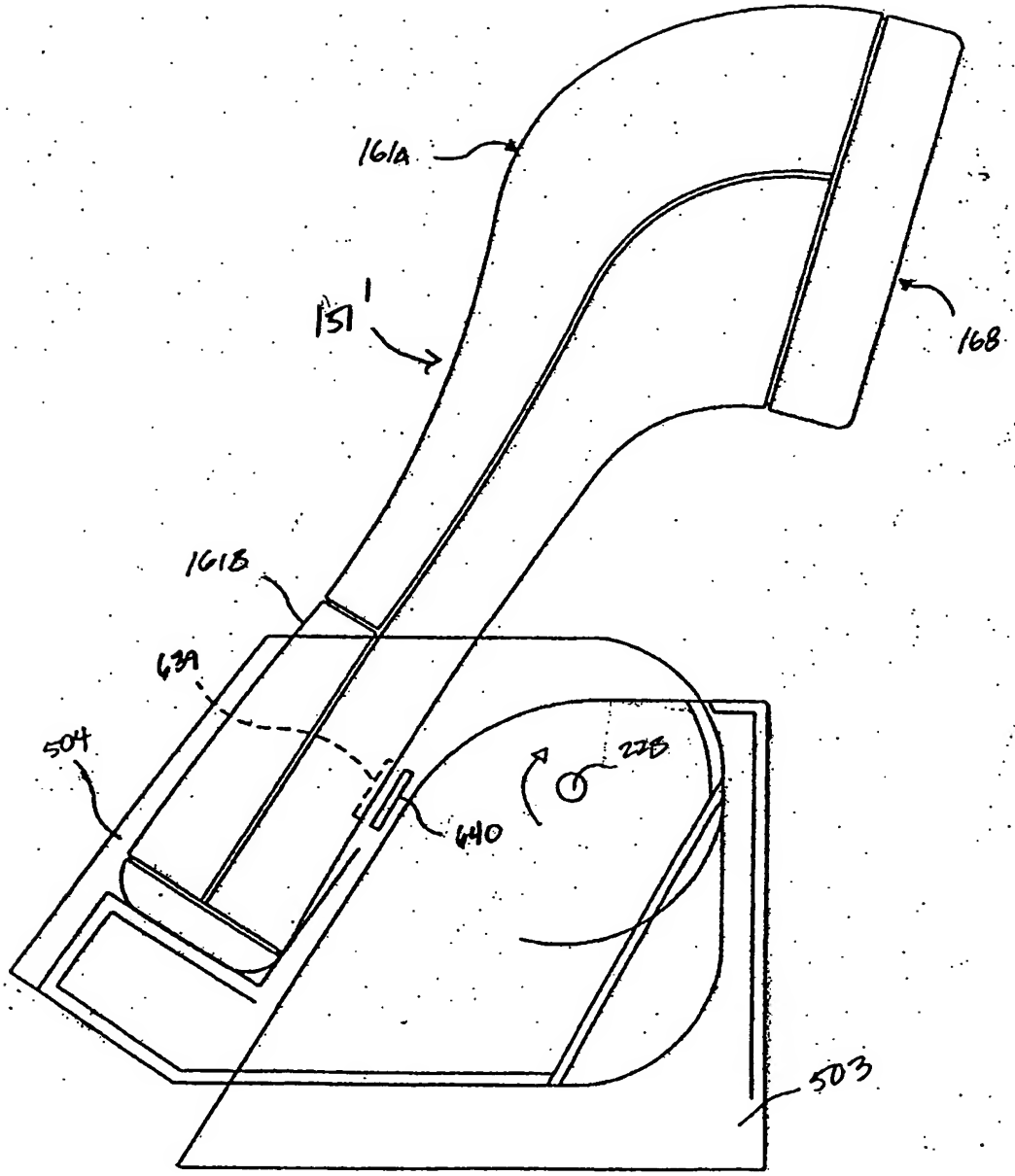


FIG. 5B

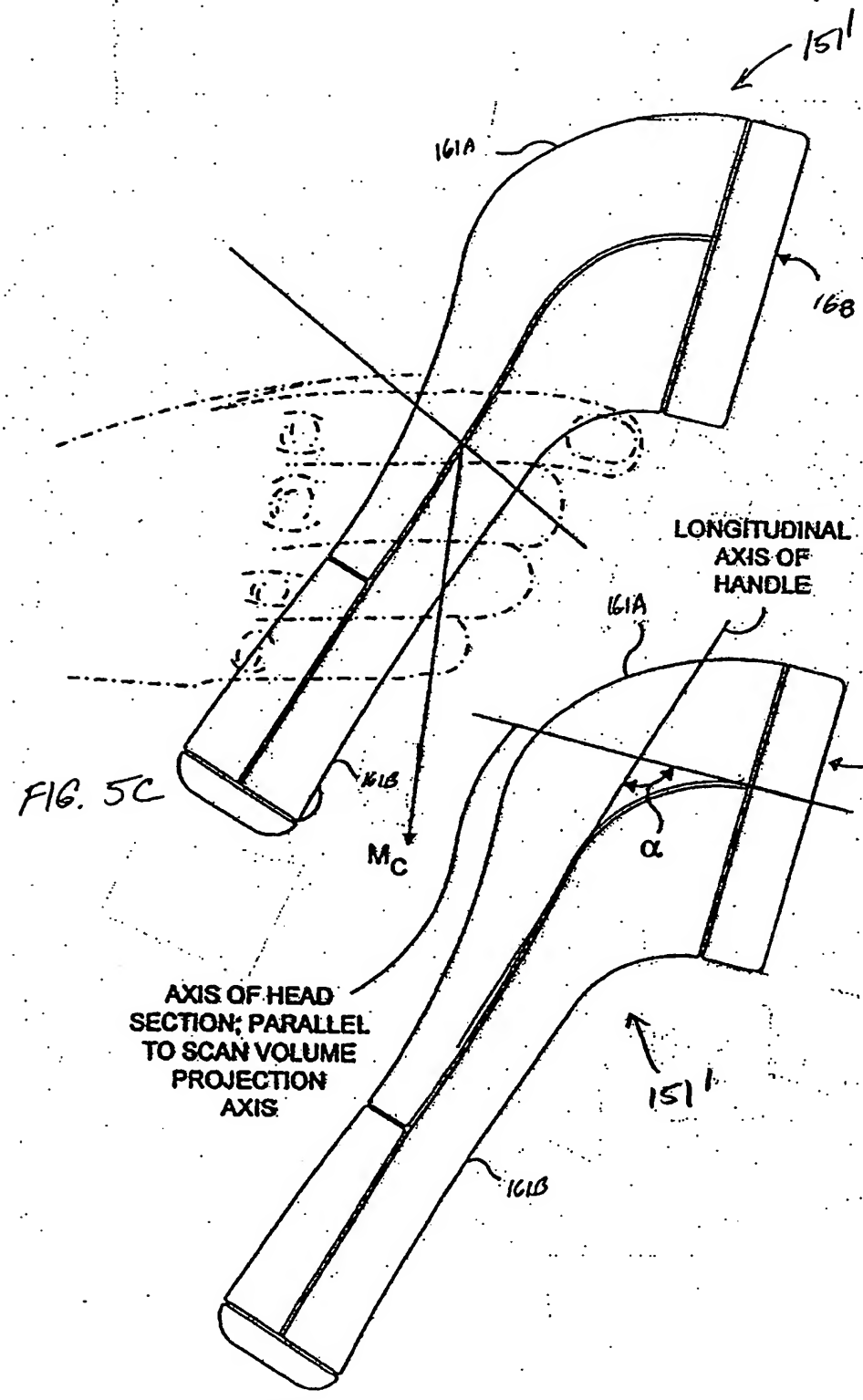


FIG. 5C

FIG. 5D

20080040-24SEP2008

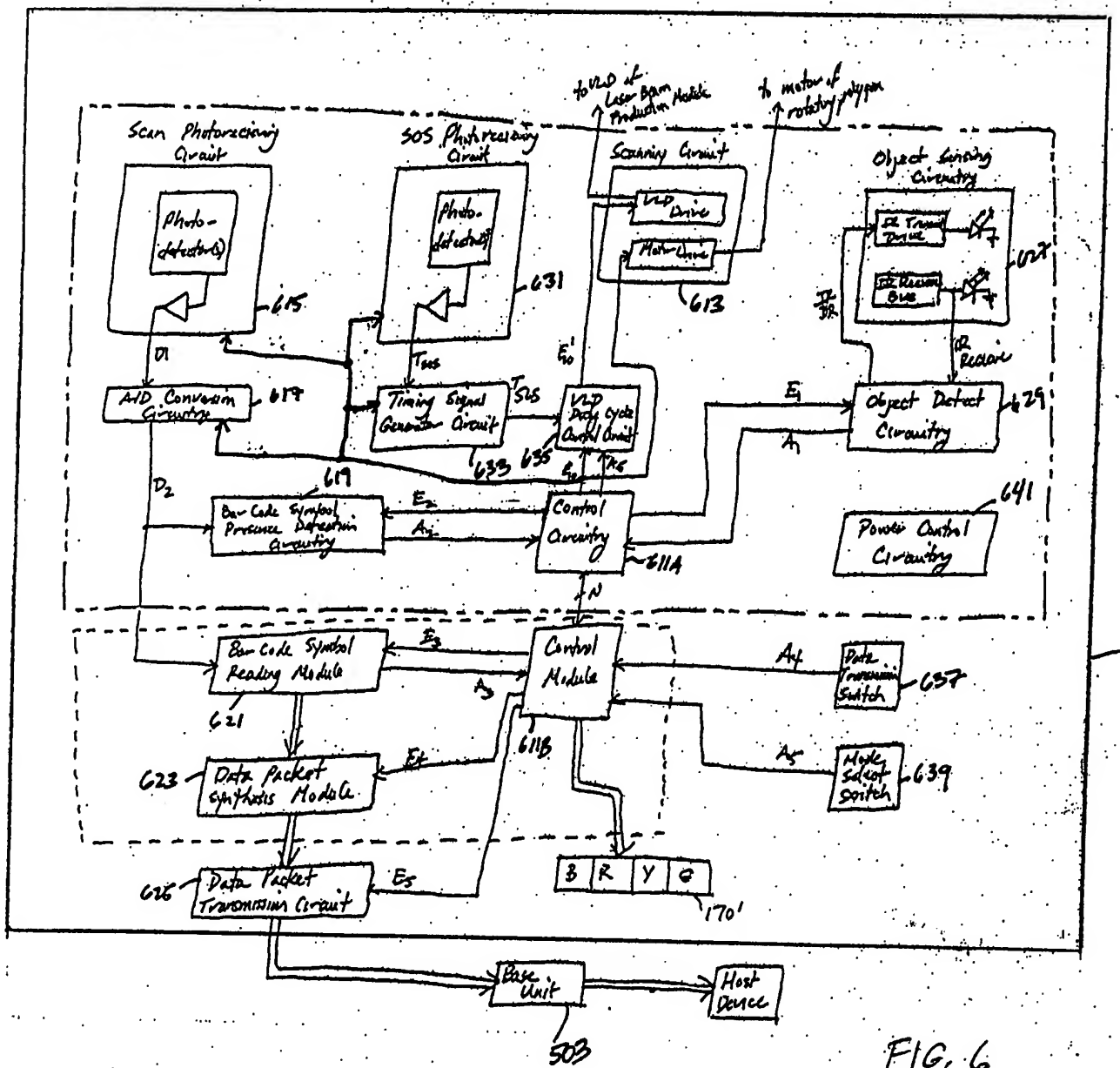

Scan Photoreceiving Circuit
Photo-detector(s)
615
SOS Photoreceiving Circuit
Photo-detector(s)
631
to VLD or Laser Beam Production Module
to motor of rotating polygon
Scanning Circuit
VLD Drive
Motor Drive
613
Object Sensing Circuitry
627
D1
A/D Conversion Circuitry
617
Timing Signal Generator Circuit
633
VLD Duty Cycle Control Circuit
635
Object Detect Circuitry
629
D2
619
Bar Code Symbol Presence Detection Circuitry
Control Circuitry
611A
641
Power Control Circuitry
151'
Bar Code Symbol Reading Module
621
Control Module
611B
Data Transmission Switch
637
Data Packet Synthesis Module
623
Mode Select Switch
639
Data Packet Transmission Circuit
625
B
R
Y
G
170'
Base Unit
503
Host Device

FIG. 6

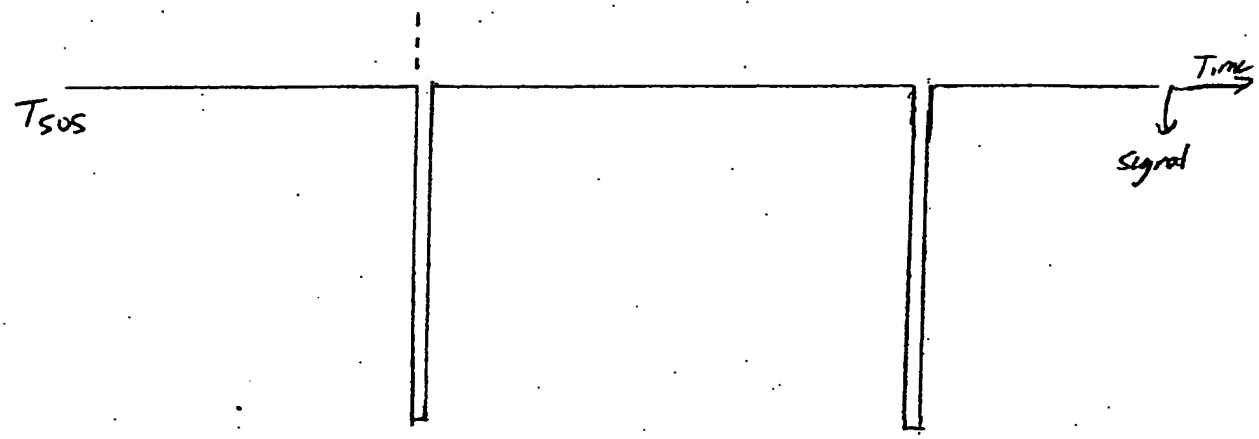


FIG. 7A

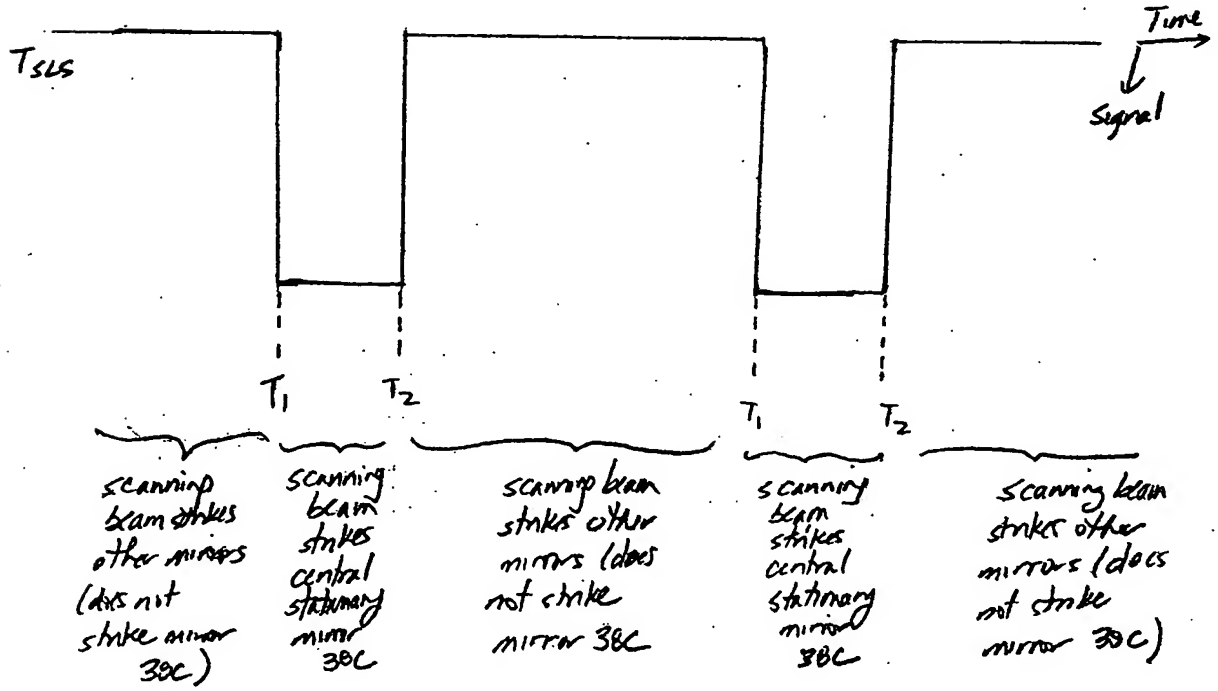


FIG. 7B

$$E_{10}' = (\overline{T_{SLS}} \cdot E_{10} \cdot A_S) + (E_{10} \cdot \overline{A_C})$$

FIG. 7C

2080442.0408

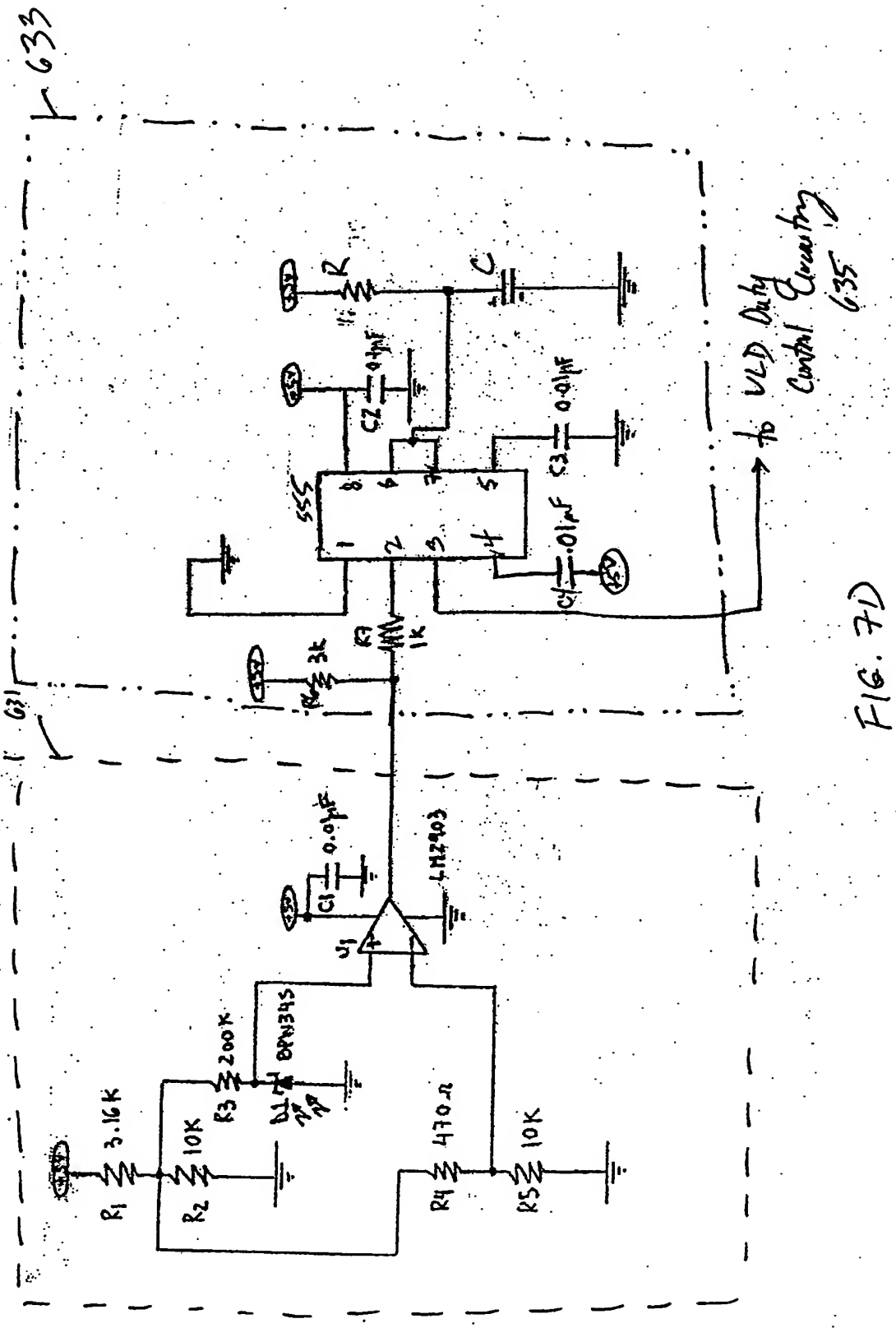
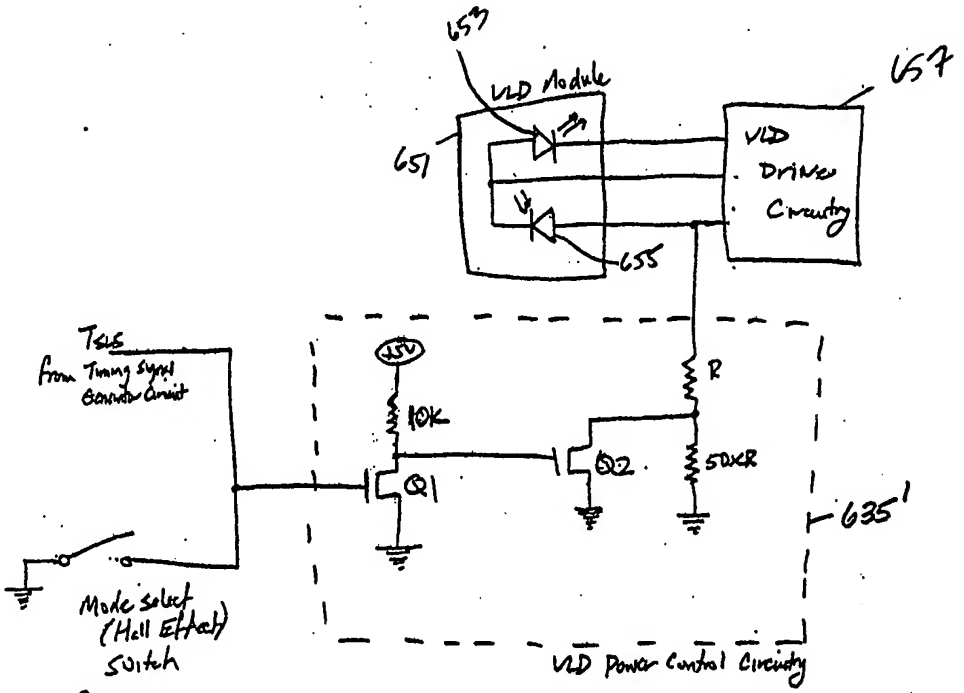
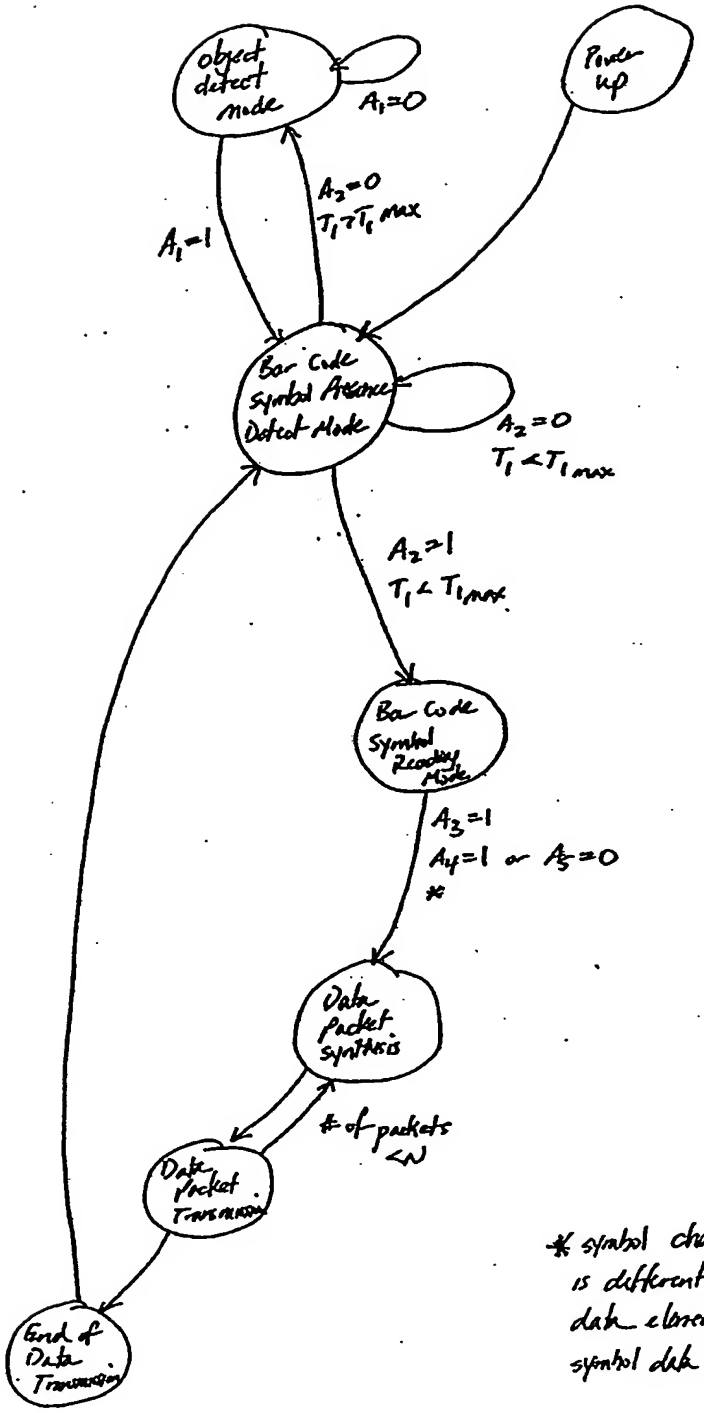

633
631
R
C
C2 .01μF
C3 0.01μF
555
C4 .01μF
+5V
To VLD Duty Control Circuitry 635
R7 1K
3K
C1 0.01μF
LM2903
U1
R1 3.16K
R2 10K
R3 200K
D1 BPW34S
R4 470Ω
R5 10K

FIG. 7D



Mode Select	T_{SLS}	Q1	Q2	R_{EFF}	P_{LASER}
Open	H	ON	OFF	~51R_{SET}	Low
Open	L	OFF	ON	~R_{SET}	Normal
Closed	X	OFF	ON	~R_{SET}	Normal

FIG. 7E



* symbol character data is different than data element in decoded symbol data buffer

FIG. 8

20080108 24th FOOT

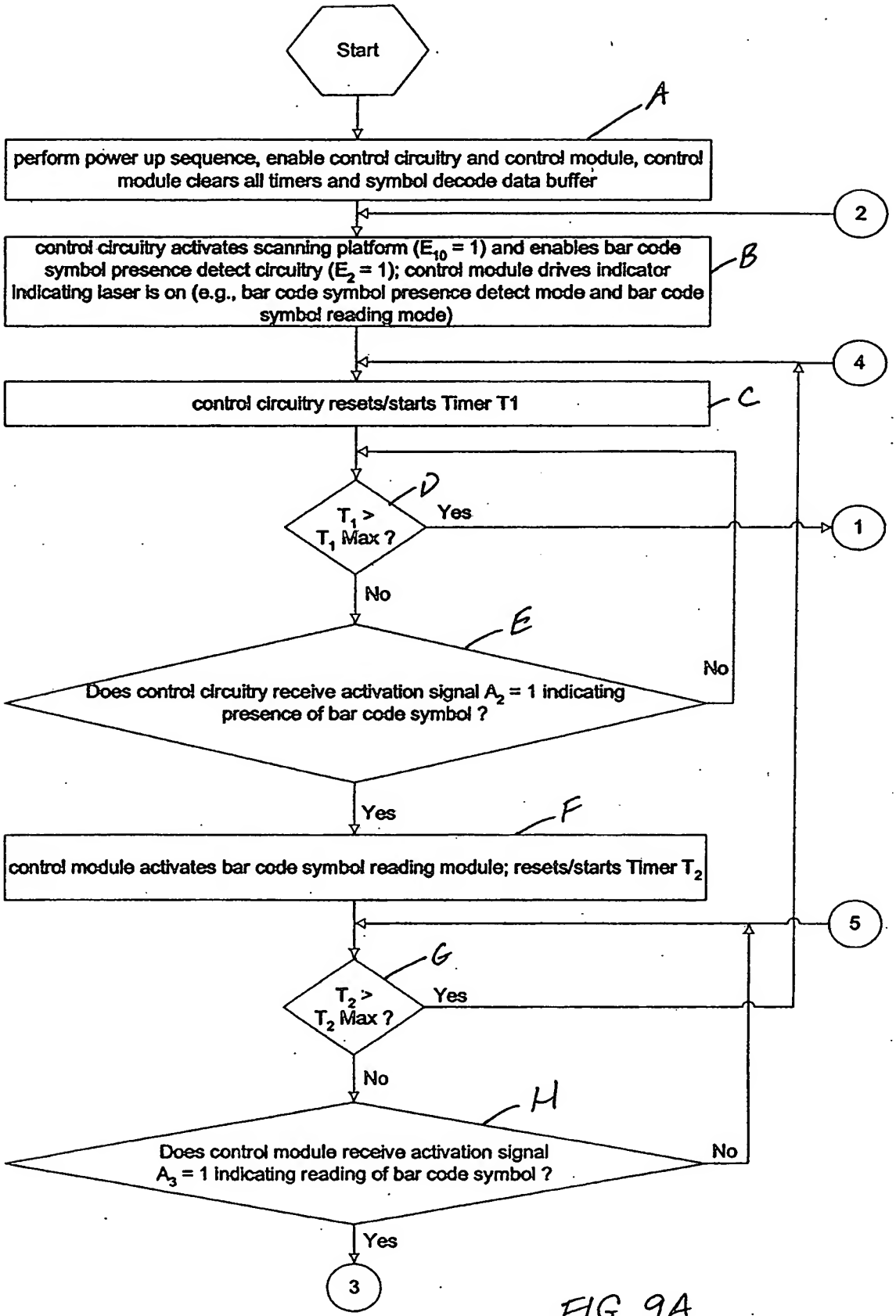

Start
A
perform power up sequence, enable control circuitry and control module, control module clears all timers and symbol decode data buffer
2
control circuitry activates scanning platform (E_{10} = 1) and enables bar code symbol presence detect circuitry (E_2 = 1); control module drives indicator indicating laser is on (e.g., bar code symbol presence detect mode and bar code symbol reading mode)
B
4
control circuitry resets/starts Timer T1
C
D
T_1 > T_1 Max ?
Yes
1
No
E
Does control circuitry receive activation signal A_2 = 1 indicating presence of bar code symbol ?
No
Yes
F
control module activates bar code symbol reading module; resets/starts Timer T_2
5
G
T_2 > T_2 Max ?
Yes
No
H
Does control module receive activation signal A_3 = 1 indicating reading of bar code symbol ?
No
Yes
3

FIG. 9A

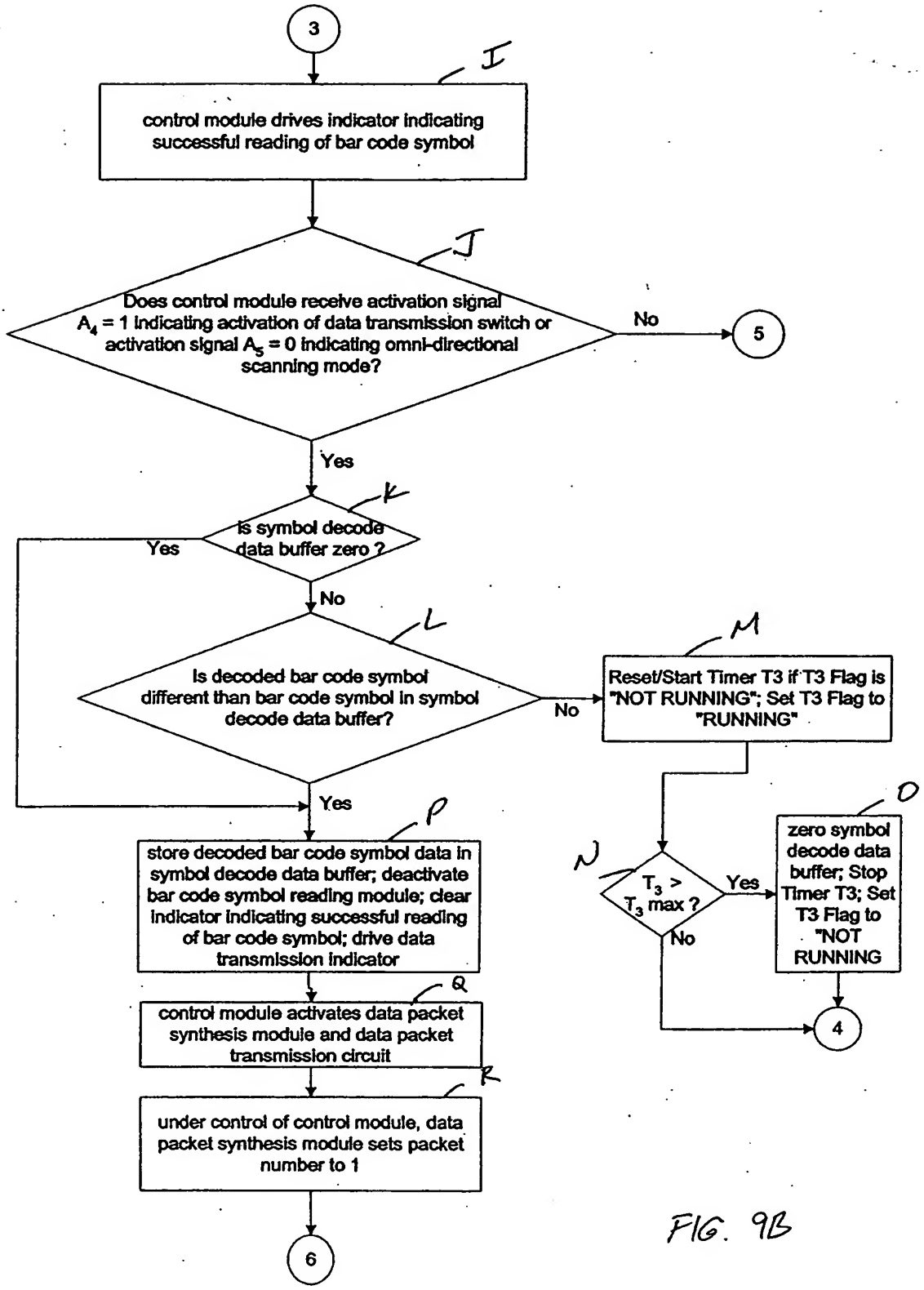


FIG. 9B

10045345 - 040805

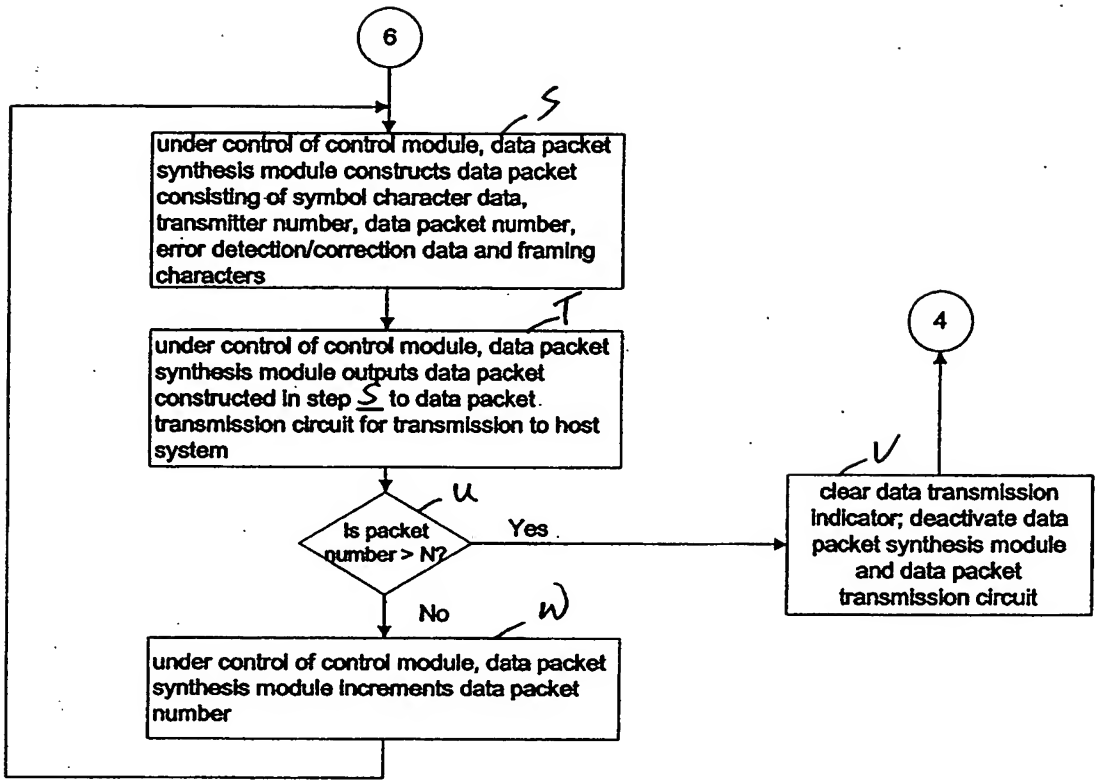


FIG. 9C

20040240502 - 04/08/2004

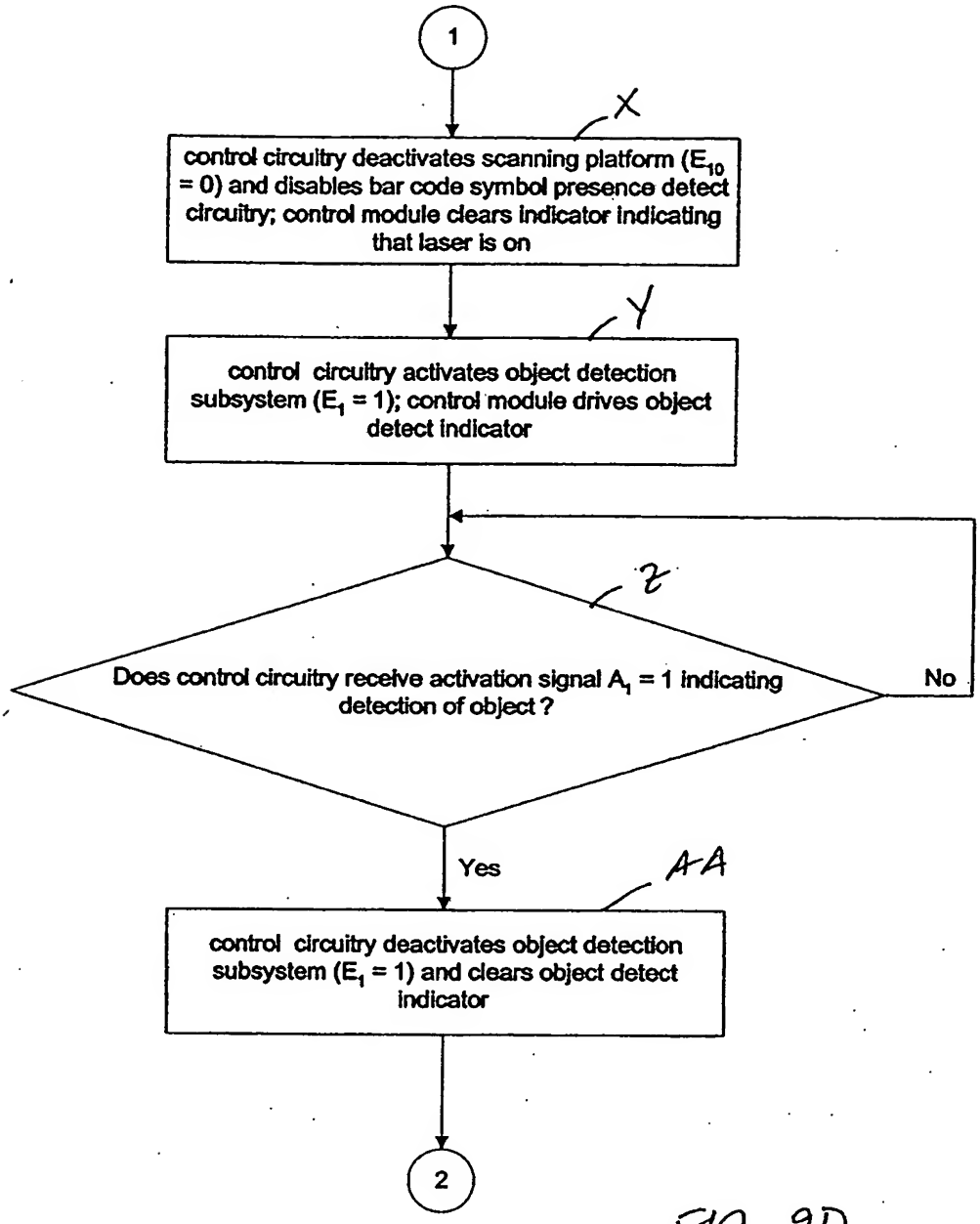


FIG. 9D

US 6,340,114 B1